STATE OF CALIFORNIA
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DEPARTMENT OF CONSUMER AFFAIRS

STATE AND CONSUMER SERVICES AGENCY • ARNOLD SCHWARZENEGGER, GOVERNOR

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Office of the Secretary,
Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814

RE: Comments on the CPSC's Proposed Furniture Flammability Standard 16 CFR 1634

Introduction

On March 4, 2008 the Consumer Products Safety Commission (CPSC) published a notice of proposed rulemaking (NPR) on upholstered furniture in the Federal Register. CPSC is currently soliciting public comments on the proposed standard through May 19, 2008. In this document a national residential furniture flammability standard entitled: "16 CFR part 1634 Standard for the Flammability of Residential Upholstered Furniture" has been proposed. The link on the CPSC's web menu is: http://www.cpsc.gov/businfo/frnotices/fr08/cpscfr08.html. The full history of CPSC's activities in regards to developing a national furniture flammability standard is described on page 11702 (page one) of the above referenced document under "Background".

Petitioned by the National Association of State Fire Marshals (NASFM) in 1993, CPSC began looking into flammability of upholstered furniture. CPSC started this work by looking into the existing furniture standards including California Technical Bulletin 117, United Kingdom's BS 5852, UFAC's smoldering standards, the 2002 revision of TB 117, and others. In the following 15 years, CPSC's proposed furniture standard was subject to many changes and modifications. The early versions of its standard included both open flame tests as well as cigarette smoldering tests. Later, the smoldering test was dropped and only open flame tests were retained. Finally, the latest proposed standard (dated March 2008) contains primarily a cigarette smoldering test and has no provisions for an open flame test of the furniture or its components. For fabrics that fail the smoldering test, a barrier test is considered in the standard that includes both a smoldering test and an open flame test. The proposed standard is apparently approved by the two existing CPSC's commissioners. CPSC has only two commissioners at this time since the third spot is currently vacant.

As we have indicated in our comments, the Bureau strongly believes that the CPSC's latest proposed test method is a significant step backwards and will seriously compromise the safety of the California consumers in regards to open flame fire hazard of upholstered furniture.

Comments

Since October 1975, the California Bureau of Home Furnishings and Thermal Insulation (the Bureau) has enforced a furniture flammability standard known as California Technical Bulletin 117 (TB 117) that addresses small open flame ignition and smoldering sources. Available fire statistics have shown that, despite its weaknesses, this minimum California upholstered furniture flammability standard has provided improvements in fire resistance for upholstered furniture components compliant with the standard. On average, upholstered furniture fire deaths and injuries in California have been well below national levels.

The Bureau strongly believes that any national furniture flammability standard must address the typical scenario of open flame ignition in upholstered furniture. Preventing hazards to life, health and property that these products represent when ignited is of extreme concern. Although the national fire statistics show that the majority of the upholstered furniture fires are caused by carelessly discarded smoldering cigarettes, the open flame ignition of upholstered furniture has also consistently posed a serious fire hazard.

Here are some of the most important reasons that an open flame standard for residential upholstered furniture is necessary:

National fire statistics show that many open flame residential fires often result in injuries and fatalities in children. According to U.S. Fire Administration/National Fire Data dated April 2005 [1], an estimated 2,490 children age of 14 or younger were injured or killed in residential fires in 2002. Fifty-six percent of child fire casualty deaths were under the age of 5. According to these data arson (30%), open flame (28%) and heating (17%) were the leading causes of fires resulting in child fire deaths in 2002. Upholstered furniture, cooking materials, bedding, and mattresses were the primary materials first ignited in fires that resulted in child casualties. Bedding and upholstered furniture were the materials first ignited in 38% of fatal child fires. Lighters and candles were the primary heat sources for these fires.

A November 2001 report by the U.S. Fire Administration on multiple-fatality fires [2] shows that these fires originate mainly in the lounge area, such as living rooms and family rooms. From 1996 to 1998, fires originating in the lounge areas accounted for 33% of multiple-fatality fires; 22% originate in bedrooms and 15% originate in the kitchen [3]. According to the same report the leading form of material ignited in multiple-fatality fires is upholstered sofa and chairs and the leading form of heat of ignition for such fires is open flame which includes candles, matches and lighters. In fact, the latest data from U.S. Fire Administration [3] indicate the rise in candle fires in residential dwellings. According to these data, the explosive growth of the candle sales in recent years parallels the annual increase in candle fires. The incidences of fires directly attributable to candles in residential structures have increased since 1993. The leading materials first ignited by candles are cabinetry, mattresses, curtains and upholstered furniture.

Regardless of what item ignites first, consideration of the size of the fuel load in residences is of utmost importance and must not be neglected. Modern day residences contain large volumes of upholstered furniture and bedding that overall constitutes a substantial amount of ready-to-burn fuel load that can significantly contribute to any developing fire. It is, therefore, extremely critical to address the potential fire hazard of upholstered furniture and its contribution to the heat released by the combustibles, namely, the cover and the inside filling components. Not only is upholstered furniture among the most readily ignitable and combustible items in the house, but more importantly, they often constitute the major portion of the fuel load when a fire is initiated in a room. A single sofa or even a single-seat fully upholstered lounge chair containing a large volume of highly flammable foam can burn vigorously upon ignition by even a small open flame and quickly reach flashover and post flashover conditions. Furniture fire test data has clearly demonstrated that the bulk of the heat contained in an upholstered furniture item is contained within the filling materials, in particular polyurethane foam. Non-fire resistant polyurethane foam is extremely flammable and will easily ignite and burn rapidly when contacted with a small open flame. In addition, when ignited, the upholstery cover fabric acts as a secondary ignition source for the foam substrate if the filling components are not protected. A sofa containing a large volume of non fire resistant foam could quickly reach beyond flashover conditions, in excess of 2-5 MW heat release rates leaving the occupants with little or no escape time.

Moreover, upholstery fabrics such as heavy polyolefin's and synthetic blends that are highly smolder resistant and will easily pass the CPSC's proposed standard, are highly flammable and will easily ignite with a small open flame and can by themselves, i.e. even without contribution of the filling contents, constitute a substantial amount of fuel load and cause serious fires when ignited by an open flame. The Bureau's research data has shown that, a sofa containing only a highly flammable fabric with inert (non-combustible) filling content, can reach peak heat release rates in excess of 335 kW and a total heat release of 150 MJ when ignited with a small open flame. That amount of heat is directly from the burning of the cover fabric alone.

Because fillings in most articles of furniture, especially fully upholstered furniture contain ample fuel that can cause flashover of a typical room, avoidance of fill involvement is critical to minimization of fire growth and avoidance of a worst-case fire. Thus, the impact of propagation of a fire due to filling involvement should not be discounted. Improvements in the fire performance of filling materials or preventing the fire from reaching them (fire barriers) are essential to a safer standard.

Problems with CPSC's proposed standard

1. Deficiencies of the proposed standard

While a small portion of existing upholstery fabrics may demonstrate some resistance to ignition from small open flames, the vast majority of fabrics and nearly all synthetic or mostly synthetic upholstery fabrics can easily ignite with a small open flame while the same fabrics can easily pass a cigarette smoldering test. Under the CPSC's proposed standard, the Type I

upholstered furniture containing non fire retardant foam, does not require any further testing when it contains any smolder resistant fabrics. Such furniture poses a very serious open flame fire hazard and constitutes a large volume of highly flammable fuel in a room. Considering the fact that many open flame furniture fires are caused by small children playing with matches or lighters, the seriousness of such hazard can not be overstated.

In order to prevent fast developing fires once ignition has occurred, the Bureau believes that the filling contents of upholstered furniture must be either resistant to small open flame or it must be protected by an effective fire barrier. Manufacturers must be given the choice of either using fire resistant fillings that are proven to be also safe in regards to health effects, or using fire barriers, to fully encase the highly flammable non-FR foams inside their furniture. The successful experience of residential mattresses meeting the federal standard 16 CFR 1633 (and TB 603 in California prior to that) is excellent evidence that the upholstered furniture can also be made fire safe by using similar techniques and technologies.

Today, many brands of highly fire resistant, affordable and environmentally safe fire barriers, in the forms of fabrics, pads or battings are available for furniture manufacturers to use in making their furniture highly fire safe. Many such products, particularly pads and battings can simply replace the standard synthetic battings that are often wrapped around foam pads that are used in upholstered furniture.

The national furniture flammability standard must include an open flame fire barrier test that can be similar to the CPSC's proposed test for the Type II furniture with some modifications. In addition, loose fill components such as shredded foams, must also be encased in fire resistant tickings or barrier fabrics.

2. Revised TB 117 – A Start not the Final Solution

The Bureau of Home Furnishings has pioneered the development, adoption and enforcement of furniture and bedding flammability standards and is willing to assist the CPSC in developing a more effective and realistic furniture flammability standard. The proposed draft Technical Bulletin 117, dated February 2002, offered improvements in the performance of fabrics, fiber battings, polyurethane foams and loose fillings and included a composite test to allow use of a wider choice of fabrics. However, this revision was based on the research tests performed on materials and technologies that were available at that time (late 1990s and early 2000s). Since then a number of new developments have occurred that warrant a closer look at the revised draft standard and its provisions.

Since late 1990s and early 2000s, wide varieties of fire blocking barriers in the forms of soft padding, batting, and fabrics have come to the market that were not available at that time. Many of these materials are being successfully and affordably used in mattresses to meet the very stringent open flame test of 16 CFR 1633 and prior to that Technical Bulletin 603 in California. Nearly all mattress manufacturers use some kind of fire resistant padding materials in their mattresses to fully encase the highly flammable foams inside their mattresses in order

to pass 16 CFR 1633. This is done while maintaining the same level of comfort and esthetics that consumers enjoyed prior to implementation of 16 CFR 1633. In most cases, the manufacturers simply replaced their old non-FR pads with fire resistant ones. Most such barrier materials are made of inherent fire resistant fibers that are highly stable (do not break down into hazardous components used), do not pose any health risks to the consumers, and the mattresses and/or the mattresses outer fabrics do not require any added FR treatments. In addition, when TB 117 was revised, there was very little concern raised regarding fire retardant contents of the foams and their potential health risks. Therefore, use of fire retardant materials, especially foams, were incorporated into the revised TB 117 draft.

However, with the rising concerns about the adverse health effects of FR chemicals, the Bureau believes that fire safe upholstered furniture can be constructed using existing and emerging fire resistant technologies and materials while avoiding the use of any FR chemicals or treatments that may pose health hazards to the consumers. For example, successful compliance with the federal standard 16 CFR 1633 while using non-FR foams in mattresses due to emergence of vast varieties of inherently FR materials and technologies that are also environmentally safe, is a clear evidence that such an undertaking is feasible and economical.

In addition, a furniture flammability standard should also include provisions for an optional actual composite test of the finished article, if the manufacturer chooses such an option. In this way, furniture containing naturally fire resistant cover fabrics such as leather, wool, silk and their blends may be able to pass an open flame test of the furniture composite (on actual article or on a mock-up substitute) without the use of fire barriers, fire resistant fills or any FR treatments.

The Bureau believes that the 2002 revision of TB 117 can be further modified to accommodate all the provisions and concerns stated above while still offering significant improvement over the current 117 standard and serve as an effective, yet feasible and affordable national furniture flammability standard. Specifically, a fire barrier test method can be a major addition to that proposed test method. For the majority of fabrics that do not pass an open flame fabric test, either a fire barrier (with non-FR filling) or a fire resistant filling that is environmentally safe can be used, meaning no FR treatment of cover fabrics is necessary.

3. Field Enforcement Issues

CPSC's proposed standard is in effect only a fabric test, and in some cases, i.e. when smolder-prone fabrics are used, a barrier test is required that includes both a smoldering test and an open flame test . These compliance tests can be best performed by the material (fabric or barrier) suppliers before marketing their products. The proposed regulations do not stipulate provisions or alternatives for compliance verification (by enforcement authorities) on actual articles of upholstered furniture. Only provisions on extensive record keeping requirements are included in the proposed regulations. The large number of tests required for either the smoldering or open flame (for barriers) parts of the standard, makes it practically impossible to verify the compliance for even the largest size furniture. Obviously, without an effective and practical enforcement program and guidelines the effectiveness of any regulation will be in

doubt. The Bureau believes that while the main body of a proposed standard can primarily serve as a tool for the supplier and manufacturers to conduct and document compliance testing, either a clear program for field sampling and enforcement testing must be detailed or the local enforcement authorities or agencies must be given the authority and guidelines on how to enforce the proposed regulations. Again, the Bureau's long experience in field sampling and enforcement testing as well as the CPSC's 16 CFR 1633 experience, can serve as successful models for devising a practical and effective enforcement and compliance verification strategy.

References

1- U.S. Fire Administration/National Fire Data Center "Residential Fires and Child Casualties", Topical Fire Research Series, Volume 5 – Issue 2, April 2005.

2- U.S. Fire Administration/National Fire Data Center, "Multiple-Fatality Fires" Topical Fire Research Series, Volume 2, Issue 11, November 2001 (Rev. March 2002).

3- U.S. Fire Administration/National Fire Data Center "Fatal fires", Topical Fire Research Series, Volume 5 – Issue 1, March 2005.

4- U.S. Fire Administration/National Fire Data Center, "Candle Fires in Residential Structures" Topical Fire Research Series, Volume 6, Issue 1, July 2006.

Sincerely,

Laura Zuniga
Chief